

REMARKS

Claims 8-17 are pending in the present application. Claims 8 and 10-16 were rejected under 35 U.S.C. §103 (a) as being unpatentable over European Patent No. EPO 0560696 in view of Chien et al., U.S. Patent No. 5,196,815. Claims 9 and 16-17 were rejected under 35 U.S.C. §103 (a) as being unpatentable over EPO 0560696 in view of Chien et al. as applied to claim 8, and further in view of Tanimizu et al., U.S. Patent No. 5,719,365. The drawings were objected to.

A corrected Fig. 1 is submitted herewith for the Examiner's consideration.

Objection to the Drawings

The Examiner has objected to the drawings because cut-away views of insulative portions, such as housing modules 2 and 3, should be cross-hatched as such. Applicants have submitted, for the Examiner's consideration, a corrected Fig. 1 providing corrected cross-hatching having alternating thick and thin lines to the housing modules 2 and 3.

Withdrawal of the objection to the drawings is respectfully requested.

Rejection under 35 U.S.C. §103 (a) to claims 8 and 10-16

Claims 8 and 10-16 were rejected under 35 U.S.C. §103 (a) as being unpatentable over European Patent No. EPO 0560696 in view of Chien et al., U.S. Patent No. 5,196,815.

EPO 0560696 shows a circuit breaker having a rotary contact member 44 and a pair of u-shaped stationary contacts 24, 25 disposed in receptacles within an interrupter chamber housing 10. See Fig. 1.

Chien et al. describes a miniature circuit breaker having a fixed contact structure placed close to, or embedded within second housing wall portion 22. The fixed contact structure in the form of a loop having leg portions 38 and 40. See Fig. 1 and Col. 4, lines 18-24.

Independent claim 8 of the present application recites a circuit breaker including "a busbar imbedded into the outside wall and in contact with the outside wall over a large surface of the busbar." As noted by the Examiner, EPO-0560696 does not disclose the busbar being forced to fit within the outside wall. See Office Action, page 3, lines 6-7.

It is respectfully submitted that combining the EPO 0560696 and Chien et al. references would be improper. There is no suggestion in either of these references to combine them. Neither EPO 0560696 nor Chien et al. evidences a recognition of the problem addressed by the present invention of dissipation of heat generated by the busbars. See specification at paragraph 0003. EPO 0560696 shows loop-shaped busbars (u-shaped stationary contacts) 24, 25 inserted into receptacles in housing 10, leaving gaps between the busbars and the housing. See Fig. 1. As indicated in the present specification, heat generated during normal use of the busbars is transferred to the interrupter chamber housing relatively slowly because of the air surrounding the busbars is a poor heat conductor. See specification paragraph 0002. There is no reason to assume that EPO 0560696 includes any recognition of heat dissipation problem. As for Chien et al., this reference nowhere mentions heat dissipation.

Furthermore, the EPO 0560696 and Chien et al. devices are completely different types of circuit breakers. As noted by the Examiner, EPO 0560696 describes a circuit breaker having a rotary pivotal movable contact member 44' and a pair of u-shaped stationary contacts 24, 25. See Office Action, page 2, line 14-page 3, line 2. In contrast, Chien et al. describes a miniature circuit breaker having a single movable contact 54 carried by a single swinging contact arm 56.

See Col. 4, lines 40-54.

Because neither EPO 0560696 nor Chien et al. provide any suggestion to combine these references, and the devices described therein are completely different, there would have been no motivation for one of skill in the art to combine them. It is respectfully submitted that combining these references constitutes impermissible hindsight reconstruction of the present invention.

For at least the reasons stated above, withdrawal of the rejection of claims 8 and 10-16 under 35 U.S.C. §103 (a) based on EPO 0560696 in view of Chien et al. is hereby respectfully requested.

Rejection under 35 U.S.C. §103 (a) to claims 9 and 16-17

Claims 9 and 16-17 were rejected under 35 U.S.C. §103 (a) as being unpatentable over EPO 0560696 in view of Chien et al. as applied to claim 8 above, and further in view of Tanimizu et al., U.S. Patent No. 5,719,365.

Tanimizu et al. describes a switching device having a an L-shaped load side conductor 41 in main body insulator plate 4B, the conductor 41 having a vertical portion 41A extending in parallel with the axis of vacuum switch 11. See Col. 7, lines 21-23 and Fig. 1.

Dependent claim 9 of the present application recites a circuit breaker “wherein the busbar is imbedded into the outside wall by an injection molding process using the plastic material.” Independent claim 16 recites a method for manufacturing a circuit breaker, the method including “injecting the plastic material into the mold so as to surround a large surface area of the busbar.” As noted by the Examiner, EPO 0560696 does not teach the stationary contact assembly being injection molded within the outside wall. See Office Action , page 3, lines 18-19.

It is respectfully submitted that Tanimizu et al. does not teach or suggest the above-recited respective “injection molding” and “injection” features of claims 9 and 16. Contrary to the Examiner’s assertion, Tanimizu et al. does not disclose a contact support member 41a being molded within a casing of a circuit interrupter. See Office Action, page 4, lines 1-2. Tanimizu et al. is completely silent as to how the conductor 41 (with its vertical portion 41A) is affixed with insulator plate 4B. Tanimizu et al. merely describes conductor 41 in as being disposed in main body insulator plate 4B and having a vertical portion 41A extending in parallel with the axis of vacuum switch 11. See Col. 7, lines 21-23. It respectfully submitted that neither Fig. 1 nor any of the other figures of Tanimizu et al. in any way teach the “injection molding” and “injecting” features recited in claims 9 and 16, respectively. Indeed, there are other ways of disposing conductor 41 in insulator plate 4B. For example, conductor 41 could be disposed in insulator plate 4B by inserting into a corresponding receptacle in the insulator plate, as in EPO 0560696. See the present specification at paragraph 0002.

Furthermore, while Tanimizu et al. describes certain components as being “integrally molded” with main body insulator plate 4B, it notably does not describe conductor 41 as being so molded in the insulator plate. Specifically, Tanimizu et al. describes current transformer 42 and capacitor 43 as being “integrally molded within the main body insulator plate 4B” and “coupled to the load side conductor 41.” See Col. 6, line 6 through Col. 7, line 2. Since Tanimizu et al. explicitly describes these other components as being integrally molded with main body insulator plate 4B and coupled to conductor 41, but says nothing about conductor 41 being integrally molded with insulator plate 4B, it is respectfully submitted that one could not reasonably conclude that conductor 41 is integrally molded in the insulator plate 4B. In any event, it is respectfully submitted that Tanimizu et al. nowhere teaches the respective “injection molding” and “injecting” features of claims 9 and 16.

Nor does the Chien et al. reference anywhere teach or suggest the respective “injection molding” and “injecting” features of claims 9 and 16. Since at least the respective “injection molding” and “injecting” features of claims 9 and 16 are missing from each of EPO 0560696, Chien et al. and Tanimizu et al., it is respectfully submitted that a combination of these references could not teach these features.

The Examiner states that it would have been obvious to use an injection molding process for the contact assembly of EPO 0560696, as modified, for the purpose of rigidly supporting the contact assembly withing the housing and simplifying construction. See Office Action, page 4, lines 3-5. As discussed above, none of EPO 0560696, Chien et al. or Tanimizu et al. teach or suggest injection molding of the contact assembly, or busbars. Additionally, it is respectfully submitted that, though firm fixation of the busbars is mentioned as an advantage, the present invention is not directed to rigidly supporting the busbars, but rather to improving heat dissipation generated by the busbars. See specification at paragraphs 0003 and 0008. Insufficiently rigid support of the busbars is nowhere mentioned in EPO 0560696, Chien et al. or Tanimizu et al. as a problem requiring a solution. Nor do any of these references indicate that injection molding would provide rigid support. Therefore there would have been no motivation for one of skill in the are to combine the references for achieving rigid support of the busbars.

Moreover, it is respectfully submitted that there is no teaching or suggestion in any of the above references to indicate that using an injection molding process for the busbars would simplify construction of the circuit breaker. On the contrary, the prior art method of inserting the busbars into pre-existing receptacles of the housing (see specification at paragraph 0002) might in fact be simpler, but produce a less desirable result, than the claimed use of injection molding. In any event, there is no indication provided in any of EPO 0560696, Chien et al. or Tanimizu et al. that using injection molding to affix the busbars in the housing is simpler than placing the

busbars into receptacles in the housing. Therefore there would have been no motivation based on these references for one of skill in the art to use an injection molding process as claimed.

For at least the reasons stated above, withdrawal of the rejection of claims 9 and 16-17 under 35 U.S.C. §103 (a) based on EPO 0560696 in view of Chien et al. as applied to claim 8 above, and further in view of Tanimizu et al., is hereby respectfully requested.

CONCLUSION

It is respectfully submitted that the application is now in condition for allowance.

Respectfully submitted,

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